

SEQUENCE LISTING

1- porcine nucleotide sequence alpha2 delta-1

GGGGATTGATCTTCGATCGCGAAGATGGCTGCTGGCTGCCTGCTGGCCTTGA CTCTGACAC
TTTTCCAATCTTTGCTGATCGGTCCCTCATCGCAGGAGCCGTTCCCGTCGGCCG TCACTAT
5 CAAGTCATGGGTGGATAAAATGCAAGAAGACCTTGTCAACCTGGCAAAAACAGCAAGTGA
GTCAATCAGCTTGTGATATTTATGAAAAATACCAAGATTTGTATACTGTGGAACCAAATA
ATGCACGCCAGCTGGTGGAAATTGCAGCCAGGGATATTGAGAACTTCTGAGCAACAGATC
TAAAGCCCTGGTGCGCCTAGCTTTGGAAGCAGAGAAGGTTCAAGCAGCCCACCAGTGGAGA
GAGGATTTTGCAAGCAATGAAGTTGTCTACTACAATGCAAAGGATGATCTCGATCCTGAAA
10 AAAATGACAGTGAGCCAGGCAGCCAGAGGATAAAACCTGTTTTTATTGATGATGCTAATTT
TGGGCGACAGATATCTTATCAGCATGCAGCAGTCCATATTCCCACCGACATCTATGAGGGC
TCAACAATTGTGTTAAATGAACTGAACTGGACAAGTGCCTTAGATGAAGTTTTCAAGAAAA
ATCGAGAGGAAGATCCCTCATTATTGTGGCAGGTGTTTGGCAGTGCCACAGGCCTGGCCCG
GTATTATCCAGCTTCTCCATGGGTGATAACAGTAGAACTCCAAACAAGATTGACCTTTAT
15 GATGTACGAAGGAGACCATGGTACATCCAAGGAGCTGCATCTCCTAAAGATATGCTTATTC
TGGTGCACGTGAGTGAAGTGTTAGTGGTTTGACGCTTAAACTGATCCGAACATCTGTCTC
TGAAATGTTGGAACCCCTCTCAGATGACGATTTTGTGAATGTAGCTTCATTTAACAGCAAT
GCCCAGGATGTAAGCTGTTTTCAACACCTTGTCCAAGCAAATGTAAGAAATAAGAAAGTGC
TGAAAGATGCAGTTAATAATATCACAGCAAAAGGAATCACAGATTACAAGAAGGGCTTTAG
20 TTTTGCTTTTGAACAACCTGCTTAATTATAACGTTTCTAGAGCCAACTGCAATAAGATTATC
ATGTTGTTACCGATGGAGGAGAAGAGAGAGCTCAGGAGATATTTGCCAAATACAACAAAG
ACAAAAAAGTACGTGTATTCACATTTTCAGTTGGTCAACATAATTATGACAGAGGACCTAT
TCAGTGGATGGCCTGTGAAAATAAAGGTTATTATTATGAAATTCCTTCCATTGGAGCAATC
AGAATCAATACTCAGGAATATTTGGATGTTCTGGGAAGACCAATGGTTTTAGCAGGAGACA
25 AAGCTAAGCAAGTCCAGTGGACAAACGTGTACCTGGATGCACTGGAACCTGGGACTTGT CAT
TACTGGAACCTCTTCCGGTCTTCAACATAACCGGCCAAAATGAAAATAAGACGAACTTAAAG
AACCAGCTGATTCTTG GTGTGATGGGAGTTGATGTATCTTTGGAAGATATTAAAAGACTGA
CACCACGTTTTTACACTGTGCCCCAATGGCTATTACTTTGCAATTGATCCTAATGGCTATGT
TTTATTACATCCAAATCTTCAGCCAAAGAACCCCAAATCTCAGGAGCCAGTAACCTTGGAT
30 TTCCTTGATGCAGAATTAGAGAATGATATTAAAGTGGAGATCCGAAATAAAATGATAGATG
GAGAAAGTGGAGAAAAAACATTGAGAACTCTGGTTAAATCTCAAGATGAGAGATATATTGA
CAAAGGAAACAGGACATATACATGGACTCCTGTCAATGGCACAGATTACAGTTTGGCCTTG

GTATTACCAACCTACAGTTTTTACTATATAAAAGCCAAAATAGAAGAGACAATAACTCAGG
CCAGATCAAAAAAGGGCAAAATGAAGGATTCAGAAACACTGAAGCCTGATAATTTTGAAGA
ATCTGGCTATACATTCATAGCACCAAGAGACTACTGCAATGACCTTAAAATATCAGATAAT
AATACCGAATTTCTTTTAACTTTAATGAGTTTATTGATAGAAAACTCCAAACAACCCGT
5 CATGCAACACAGATTTGATTAATAGAGTCTTGCTGGATGCGGGCTTTACAAATGAACTTGT
CCAAAATTACTGGAGTAAGCAGAAAAACATCAAGGGAGTGAAAGCACGGTTTGTGTAACT
GATGGAGGGATTACCAGAGTTTATCCCAAAGAGGCTGGAGAAAATTGGCAAGAAAACCCAG
AAACATATGAGGACAGCTTCTATAAAAGAAGTCTAGATAACGATAACTATGTTTTCTACTGC
TCCCTACTTTAACAAAAGTGGACCTGGTGCTTATGAATCAGGCATCATGGTAAGCAAAGCT
10 GTAGAAATATACATCCAAGGAAAACTTCTTAAACCTGCAGTTGTTGGAATTAAAATTGATG
TAAATTCCTGGATAGAGAATTTACCAAAACATCAATCAGGGATCCGTGTGCTGGTCCAGT
TTGTGATTGTAAAAGAAACAGTGATGTAATGGATTGTGTGATTCTAGATGATGGTGGGTTT
CTTTTGATGGCAAATCATGATGATTATACTAACCAGATTGGAAGGTTTTTTGGAGAGATTG
ACCCAAGTTTGATGAGACACCTGGTTAATATATCAGTTTATGCTTTTAACAAATCTTACGA
15 TTATCAGTCAGTGTGTGAGCCTGGTGCTGCACCAAAACAAGGAGCAGGACATCGCTCAGCA
TATGTGCCATCAATAGCAGACATCTTACACATTGGCTGGTGGGCCACTGCAGCTGCATGGT
CTATTCTACAGCAGTTTCTCTTGAGTTTGACCTTTCACGACTTCTTGAAGCAGTTGAGAT
GGAAGATGATGACTTTACCGCCTCTCTGTCAAAGCAGAGTTGCATTACTGAACAAACCCAG
TATTTCTTTGATAATGATAGCAAATCCTTCAGTGGGGTCTTGGACTGTGGTAACTGTTCCA
20 GAATCTTTCACGTTGAAAACTTATGAACACCAACTTAATATTCATAATGGTTGAGAGCAA
AGGGACTTGTCTTGTGACACACGATTGCTCATACAAGCTGAGCAGACTTCTGACGGTCCA
GATCCTTGTGATATGGTTAAGCAACCCAGATACCGAAAAGGGCCTGATGTCTGTTTTGATA
ACAATGCCTTGGAGGATTATACCGACTGTGGTGGTGTCTTGGATTAAATCCCTCCCTGTG
GTCCATCTTCGGAATCCAGTGTGTTTTACTTTGGCTTTTATCTGGCAGCAGACACTACCAG
25 TTATGACCCTTCTAAAACCAAATCTGCATATTAACTTCAGACCCTGCCAGAATAGGAGCC
CTCAATTGCATTAAAATAGGGTAACTGCAGAATCAGCAGAACTCTAGCTGGGCCCATCCC
ATGGCATCAATCTCAGACTCATAAGGCACCCACTGGCTGCATGTCAGGGTGTGAGATCCTG
AACTTGTGTGAATGCTGCATCATCTATGTATAACATCAGAGCAAAATTCTATACCTATTC
TATTGGAAAATTTGAGAATTTGTTGTTGCATTGTTGGTGATTACATGTAAAAGGGCTCCCC
30 ACACAGTTGTGTATGAATCACGCAAATTGTCTTGATTTTGACTTGCTGCAATCCTTGTCTT
TTTACCAAGAAAATCTCTAGAGGGAAAAAAAAGTCTTTTTTTTCTTCACTAATTCTGCT

ACAAATTATTTCTGCTTGGAGTAGTTATTATTAAAAATATATATATAGAGAGAGAGAGA
GAGAATTAACATTGGTGTAACTCTGTCAAAATAGAAATAATGGCTTATTTTCTACAAAAAA

2 - porcine nucleotide sequence

5 ATGGCTGCTGGCTGCCTGCTGGCCTTGACTCTGACACTTTTCCAATCTTTGCTGATCGGTC
CCTCATCGCAGGAGCCGTTCCCGTCGGCCGTCACTATCAAGTCATGGGTGGATAAAATGCA
AGAAGACCTTGTCACCCTGGCAAAAACAGCAAGTGGAGTCAATCAGCTTGTGATATTTAT
GAAAAATACCAAGATTTGTATACTGTGGAACCAAATAATGCACGCCAGCTGGTGGAAATTG
CAGCCAGGGATATTGAGAACTTCTGAGCAACAGATCTAAAGCCCTGGTGCCTAGCTTT
10 GGAAGCAGAGAAGGTTCAAGCAGCCCACCAGTGGAGAGAGGATTTTGCAAGCAATGAAGTT
GTCTACTACAATGCAAAGGATGATCTCGATCCTGAAAAAATGACAGTGAGCCAGGCAGCC
AGAGGATAAAACCTGTTTTTATTGATGATGCTAATTTTGGGCGACAGATATCTTATCAGCA
TGCAGCAGTCCATATTCCCACCGACATCTATGAGGGCTCAACAATTGTGTTAAATGAACTG
AACTGGACAAGTGCCTTAGATGAAGTTTCAAGAAAAATCGAGAGGAAGATCCCTCATTAT
15 TGTGGCAGGTGTTTGGCAGTGCCACAGGCCTGGCCCGGTATTATCCAGCTTCTCCATGGGT
TGATAACAGTAGAACTCCAAACAAGATTGACCTTTATGATGTACGAAGGAGACCATGGTAC
ATCCAAGGAGCTGCATCTCCTAAAGATATGCTTATTCTGGTCGACGTGAGTGAAGTGTTA
GTGGTTTGACGCTTAACTGATCCGAACATCTGTCTCTGAAATGTTGGAAACCCTCTCAGA
TGACGATTTTGTGAATGTAGCTTCATTTAACAGCAATGCCCAGGATGTAAGCTGTTTTCAA
20 CACCTTGTCCAAGCAAATGTAAGAAATAAGAAAGTGCTGAAAGATGCAGTTAATAATATCA
CAGCAAAAGGAATCACAGATTACAAGAAGGGCTTTAGTTTTGCTTTTGAACAACTGCTTAA
TTATAACGTTTCTAGAGCCAACTGCAATAAGATTATCATGTTGTTACCGATGGAGGAGAA
GAGAGAGCTCAGGAGATATTTGCCAAATACAACAAAGACAAAAAAGTACGTGTATTCACAT
TTTCAGTTGGTCAACATAATTATGACAGAGGACCTATTCAGTGGATGGCCTGTGAAAATAA
25 AGGTTATTATTATGAAATTCCTTCCATTGGAGCAATCAGAATCAATACTCAGGAATATTTG
GATGTTCTGGGAAGACCAATGGTTTTAGCAGGAGACAAAGCTAAGCAAGTCCAGTGGACAA
ACGTGTACCTGGATGCACTGGAACCTGGGACTTGTCTTACTGGAACCTCTCCGGTCTTCAA
CATAACCGGCCAAAATGAAAATAAGACGAACTTAAAGAACCAGCTGATTCTTGGTGTGATG
GGAGTTGATGTATCTTTGGAAGATATTTAAAGACTGACACCACGTTTTTACACTGTGCCCCA
30 ATGGCTATTACTTTGCAATTGATCCTAATGGCTATGTTTTATTACATCCAAATCTTCAGCC
AAAGAACCCCAAATCTCAGGAGCCAGTAACCTTGGATTTCTTGATGCAGAATTAGAGAAT
GATATTAAAGTGGAGATCCGAAATAAAATGATAGATGGAGAAAGTGGAGAAAAACATTCA

GAACTCTGGTTAAATCTCAAGATGAGAGATATATTGACAAAGGAAACAGGACATATACATG
GACTCCTGTCAATGGCACAGATTACAGTTTGGCCTTGGTATTACCAACCTACAGTTTTTAC
TATATAAAAGCCAAAATAGAAGAGACAATAACTCAGGCCAGATCAAAAAGGGCAAAATGA
AGGATTCAGAAACACTGAAGCCTGATAATTTTGAAGAATCTGGCTATACATTCATAGCACC
5 AAGAGACTACTGCAATGACCTTAAAATATCAGATAATAATACCGAATTTCTTTTAACTTT
AATGAGTTTATTGATAGAAAACTCCAAACAACCCGTCATGCAACACAGATTTGATTAATA
GAGTCTTGCTGGATGCGGGCTTTACAAATGAACTTGTCCAAAATTACTGGAGTAAGCAGAA
AAACATCAAGGGAGTGAAAGCACGGTTTGTGTAACTGATGGAGGGATTACCAGAGTTTAT
CCCAAAGAGGCTGGAGAAAATTGGCAAGAAAACCCAGAAACATATGAGGACAGCTTCTATA
10 AAAGAAGTCTAGATAACGATAACTATGTTTTCACTGCTCCCTACTTTAACAAAAGTGGACC
TGGTGCTTATGAATCAGGCATCATGGTAAGCAAAGCTGTAGAAATATACATCCAAGGAAAA
CTTCTTAAACCTGCAGTTGTTGGAATTAAAATTGATGTAAATTCCTGGATAGAGAATTTCA
CCAAAACATCAATCAGGGATCCGTGTGCTGGTCCAGTTTGTGATTGTAAAAGAAACAGTGA
TGTAATGGATTGTGTGATTCTAGATGATGGTGGGTTTCTTTTGATGGCAAATCATGATGAT
15 TATACTAACCAGATTGGAAGGTTTTTTGGAGAGATTGACCCAAGTTTGATGAGACACCTGG
TTAATATATCAGTTTATGCTTTTAACAAATCTTACGATTATCAGTCAGTGTGTGAGCCTGG
TGCTGCACCAAAAACAAGGAGCAGGACATCGCTCAGCATATGTGCCATCAATAGCAGACATC
TTACACATTGGCTGGTGGGCCACTGCAGCTGCATGGTCTATTCTACAGCAGTTTCTCTTGA
GTTTGACCTTTCCACGACTTCTTGAAGCAGTTGAGATGGAAGATGATGACTTTACCGCCTC
20 TCTGTCAAAGCAGAGTTGCATTACTGAACAAACCCAGTATTTCTTTGATAATGATAGCAA
TCCTTCAGTGGGGTCTTGGACTGTGGTAACTGTTCCAGAATCTTTCACGTTGAAAACTTA
TGAACACCAACTTAATATTCATAATGGTTGAGAGCAAAGGACTTGTCTTGTGACACACG
ATTGTGA

25 **3 - porcine nucleotide sequence**

ATGGCTGCTGGCTGCCTGCTGGCCTTGA CTCTGACACTTTTCCAATCTTTGCTGATCGGTC
CCTCATCGCAGGAGCCGTTCCCGTCGGCCGTC ACTATCAAGTCATGGGTGGATAAAATGCA
AGAAGACCTTGTCAACCCTGGCAAAAACAGCAAGTGGAGTCAATCAGCTTGTGATATTTAT
GAAAAATACCAAGATTTGTATACTGTGGAACCAATAATGCACGCCAGCTGGTGGAAATTG
30 CAGCCAGGGATATTGAGAACTTCTGAGCAACAGATCTAAAGCCCTGGTGC GCCTAGCTTT
GGAAGCAGAGAAGGTTCAAGCAGCCCACCAGTGGAGAGAGGATTTTGCAAGCAATGAAGTT
GTCTACTACAATGCAAAGGATGATCTCGATCCTGAAAAAATGACAGTGAGCCAGGCAGCC

AGAGGATAAAACCTGTTTTTATTGATGATGCTAATTTTGGGCGACAGATATCTTATCAGCA
TGCAGCAGTCCATATTCCCACCGACATCTATGAGGGCTCAACAATTGTGTAAATGAACTG
AACTGGACAAGTGCCTTAGATGAAGTTTTCAAGAAAAATCGAGAGGAAGATCCCTCATTAT
TGTGGCAGGTGTTTGGCAGTGCCACAGGCCTGGCCCGGTATTATCCAGCTTCTCCATGGGT
5 TGATAACAGTAGAACTCCAAACAAGATTGACCTTTATGATGTACGAAGGAGACCATGGTAC
ATCCAAGGAGCTGCATCTCCTAAAGATATGCTTATTCTGGTCGACGTGAGTGGAAGTGTTA
GTGGTTTGACGCTTAAACTGATCCGAACATCTGTCTCTGAAATGTTGGAAACCCTCTCAGA
TGACGATTTTGTGAATGTAGCTTCATTTAACAGCAATGCCCAGGATGTAAGCTGTTTTCAA
CACCTTGTCCAAGCAAATGTAAGAAATAAGAAAGTGCTGAAAGATGCAGTTAATAATATCA
10 CAGCAAAAGGAATCACAGATTACAAGAAGGGCTTTAGTTTTGCTTTTGAACAACTGCTTAA
TTATAACGTTTCTAGAGCCAACTGCAATAAGATTATCATGTTGTTACCGATGGAGGAGAA
GAGAGAGCTCAGGAGATATTTGCCAAATACAACAAAGACAAAAAGTACGTGTATTCACAT
TTTCAGTTGGTCAACATAATTATGACAGAGGACCTATTCAGTGGATGGCCTGTGAAAATAA
AGGTTATTATTATGAAATTCCTTCCATTGGAGCAATCAGAATCAATACTCAGGAATATTTG
15 GATGTTCTGGGAAGACCAATGGTTTTAGCAGGAGACAAAGCTAAGCAAGTCCAGTGGACAA
ACGTGTACCTGGATGCACTGGAAGTGGGACTTGTCATTACTGGAAGTCTTCCGGTCTTCAA
CATAACCGGCCAAAATGAAAATAAGACGAAGTAAAGAACCAGCTGATTCTTGGTGTGATG
GGAGTTGATGTATCTTTGGAAGATATTAAAAGACTGACACCACGTTTTACACTGTGCCCCA
ATGGCTATTACTTTGCAATTGATCCTAATGGCTATGTTTTATTACATCCAAATCTTCAGCC
20 AAAGAACCCCAAATCTCAGGAGCCAGTAACCTTGGATTTCTTGATGCAGAATTAGAGAAT
GATATTAAAGTGGAGATCCGAAATAAAATGATAGATGGAGAAAGTGGAGAAAAACATTCA
GAACTCTGGTTAAATCTCAAGATGAGAGATATATTGACAAAGGAAACAGGACATATACATG
GACTCCTGTCAATGGCACAGATTACAGTTTGGCCTTGGTATTACCAACCTACAGTTTTTAC
TATATAAAAGCCAAAATAGAAGAGACAATAACTCAGGCCAGATCAAAAAGGGCAAAATGA
25 AGGATTCAGAAACACTGAAGCCTGATAATTTTGAAGAATCTGGCTATACATTCATAGCACC
AAGAGACTACTGCAATGACCTTAAAATATCAGATAATAATACCGAATTTCTTTTAACTTT
AATGAGTTTATTGATAGAAAACTCCAAACAACCCGTATGCAACACAGATTTGATTAATA
GAGTCTTGCTGGATGCGGGCTTTACAAATGAAGTGTCCAAAATTACTGGAGTAAGCAGAA
AAACATCAAGGGAGTGAAAGCACGGTTTGTGTAACTGATGGAGGGATTACCAGAGTTTAT
30 CCCAAAGAGGCTGGAGAAAATTGGCAAGAAAACCCAGAAACATATGAGGACAGCTTCTATA
AAAGAAGTCTAGATAACGATAACTATGTTTTCACTGCTCCCTACTTTAACAAAAGTGGACC
TGGTGCTTATGAATCAGGCATCATGGTAAGCAAAGCTGTAGAAATATACATCCAAGGAAAA

CTTCTTAAACCTGCAGTTGTTGGAATTAAAATTGATGTAAATTCCTGGATAGAGAATTTCA
CCAAAACATCAATCAGGGATCCGTGTGCTGGTCCAGTTTGTGATTGTAAAAGAAACAGTGA
TGTAATGGATTGTGTGATTCTAGATGATGGTGGGTTTCTTTTGATGGCAAATCATGATGAT
TATACTAACCAGATTGGAAGGTTTTTTGGAGAGATTGACCCAAGTTTGATGAGACACCTGG
5 TTAATATATCAGTTTATGCTTTTAAACAAATCTTACGATTATCAGTCAGTGTGTGAGCCTGG
TGCTGCACCAAAACAAGGAGCAGGACATCGCTCAGCATATGTGCCATCAATAGCAGACATC
TTACACATTGGCTGGTGGGCCACTGCAGCTGCATGGTCTATTCTACAGCAGTTTCTCTTGA
GTTTGACCTTTCCACGACTTCTTGAAGCAGTTGAGATGGAAGATGATGACTTTACCGCCTC
TCTGTCAAAGCAGAGTTGCATTACTGAACAAACCCAGTATTTCTTTGATAATGATAGCAAA
10 TCCTTCAGTGGGGTCTTGGACTGTGGTAACTGTTCCAGAATCTTTCACGTTGAAAACTTA
TGAACACCAACTTAATATTCATAATGGTTGAGAGCAAAGGGACTTGTCTTGTGACACACG
ATTGCTCATAACAAGCTGAGCAGACTTCTGACGGTCCAGATCCTTGTGATATGGTTAAGTGA

4 - porcine nucleotide sequence

15 ATGGCTGCTGGCTGCCTGCTGGCCTTGACTCTGACACTTTTCCAATCTTTGCTGATCGGTC
CCTCATCGCAGGAGCCGTTCCCGTCGGCCGTCACTATCAAGTCATGGGTGGATAAAATGCA
AGAAGACCTTGTCAACCTGGCAAAAACAGCAAGTGGAGTCAATCAGCTTGTGATATTTAT
GAAAAATACCAAGATTTGTATACTGTGGAACCAAATAATGCACGCCAGCTGGTGGAAATTG
CAGCCAGGGATATTGAGAACTTCTGAGCAACAGATCTAAAGCCCTGGTGCGCCCTAGCTTT
20 GGAAGCAGAGAAGGTTCAAGCAGCCCACCAGTGGAGAGAGGATTTTGCAAGCAATGAAGTT
GTCTACTACAATGCAAAGGATGATCTCGATCCTGAAAAAATGACAGTGAGCCAGGCAGCC
AGAGGATAAAACCTGTTTTTATTGATGATGCTAATTTTGGGCGACAGATATCTTATCAGCA
TGCAGCAGTCCATATTTCCACCGACATCTATGAGGGCTCAACAATTGTGTTAAATGAACTG
AACTGGACAAGTGCCTTAGATGAAGTTTTCAAGAAAAATCGAGAGGAAGATCCCTCATTAT
25 TGTGGCAGGTGTTTGGCAGTGCCACAGGCCTGGCCCGGTATTATCCAGCTTCTCCATGGGT
TGATAACAGTAGAACTCCAAACAAGATTGACCTTTATGATGTACGAAGGAGACCATGGTAC
ATCCAAGGAGCTGCATCTCCTAAAGATATGCTTATTCTGGTCGACGTGAGTGAAGTGTTA
GTGGTTTGACGCTTAACTGATCCGAACATCTGTCTCTGAAATGTTGGAAACCCTCTCAGA
TGACGATTTTGTGAATGTAGCTTCATTTAACAGCAATGCCCAGGATGTAAGCTGTTTTCAA
30 CACCTTGTCCAAGCAAATGTAAGAAATAAGAAAGTGCTGAAAGATGCAGTTAATAATATCA
CAGCAAAAGGAATCACAGATTACAAGAAGGGCTTTAGTTTTGCTTTTGAACAACTGCTTAA
TTATAACGTTTCTAGAGCCAAGTGAATAAGATTATCATGTTGTTACCGATGGAGGAGAA

GAGAGAGCTCAGGAGATATTTGCCAAATACAACAAAGACAAAAAGTACGTGTATTCACAT
TTTCAGTTGGTCAACATAATTATGACAGAGGACCTATTCAGTGGATGGCCTGTGAAAATAA
AGGTTATTATTATGAAATTCCTTCCATTGGAGCAATCAGAATCAATACTCAGGAATATTTG
GATGTTCTGGGAAGACCAATGGTTTTAGCAGGAGACAAAGCTAAGCAAGTCCAGTGGACAA
5 ACGTGTACCTGGATGCACTGGAAGTGGGACTTGTCTTACTGGAAGTCTTCCGGTCTTCAA
CATAACCGGCCAAAATGAAAATAAGACGAACTTAAAGAACCAGCTGATTCTTGGTGTGATG
GGAGTTGATGTATCTTTGGAAGATATTTAAAGACTGACACCACGTTTTTACACTGTGCCCCA
ATGGCTATTACTTTGCAATTGATCCTAATGGCTATGTTTTATTACATCCAAATCTTCAGCC
AAAGAACCCCAAATCTCAGGAGCCAGTAACCTTGGATTTCTTGATGCAGAAATTAGAGAAT
10 GATATTAAAGTGGAGATCCGAAATAAAATGATAGATGGAGAAAGTGGAGAAAAACATTCA
GAACTCTGGTTAAATCTCAAGATGAGAGATATATTGACAAAGGAAACAGGACATATACATG
GACTCCTGTCAATGGCACAGATTACAGTTTGGCCTTGGTATTACCAACCTACAGTTTTTAC
TATATAAAAGCCAAAATAGAAGAGACAATAACTCAGGCCAGATCAAAAAGGGCAAAATGA
AGGATTGAGAAACACTGAAGCCTGATAATTTTGAAGAATCTGGCTATACATTCATAGCACC
15 AAGAGACTACTGCAATGACCTTAAAATATCAGATAATAATACCGAATTTCTTTTAACTTT
AATGAGTTTATTGATAGAAAACTCCAAACAACCCGTCATGCAACACAGATTTGATTAATA
GAGTCTTGCTGGATGCGGGCTTTACAAATGAACCTGTCCAAATTACTGGAGTAAGCAGAA
AAACATCAAGGGAGTGAAAGCACGGTTTGTGTAACTGATGGAGGGATTACCAGAGTTTAT
CCCAAAGAGGCTGGAGAAAATTGGCAAGAAAACCCAGAAACATATGAGGACAGCTTCTATA
20 AAAGAAGTCTAGATAACGATAACTATGTTTTCACTGCTCCCTACTTTAACAAAAGTGGACC
TGGTGCTTATGAATCAGGCATCATGGTAAGCAAAGCTGTAGAAATATACATCCAAGGAAAA
CTTCTTAAACCTGCAGTTGTTGGAATTTAAATTGATGTAAATTCCTGGATAGAGAATTTCA
CCAAAACATCAATCAGGGATCCGTGTGCTGGTCCAGTTTGTGATTGTAAAAGAAACAGTGA
TGTAATGGATTGTGTGATTCTAGATGATGGTGGGTTTCTTTTGATGGCAAATCATGATGAT
25 TATACTAACCAGATTGGAAGGTTTTTTGGAGAGATTGACCCAAGTTTGATGAGACACCTGG
TTAATATATCAGTTTATGCTTTTAACAAATCTTACGATTATCAGTCAGTGTGTGAGCCTGG
TGCTGCACCAAAACAAGGAGCAGGACATCGCTCAGCATATGTGCCATCAATAGCAGACATC
TTACACATTGGCTGGTGGGCCACTGCAGCTGCATGGTCTATTCTACAGCAGTTTCTCTTGA
GTTTGACCTTTCCACGACTTCTTGAAGCAGTTGAGATGGAAGATGATGACTTTACCGCCTC
30 TCTGTCAAAGCAGAGTTGCATTACTGAACAAACCCAGTATTTCTTTGATAATGATAGCAAA
TCCTTCAGTGGGGTCTTGGACTGTGGTAACTGTTCCAGAATCTTTCACGTTGAAAACTTA
TGAACACCAACTTAATATTCATAATGGTTGAGAGCAAAGGGACTTGTCTTGTGACACACG

ATTGCTCATACAAGCTGAGCAGACTTCTGACGGTCCAGATCCTTGTGATATGGTTAAGCAA
CCCAGATACCGAAAAGGGCCTGATGTCTGTTTTGATAACAATGCCTTGGAGGATTATACCG
ACTGTGGTGGTGTTCCTTGA

5

5 - porcine amino acid sequence alpha2 delta-1

MAAGCLLALTTLTLFQSLIGPSSQEPFPSAVTIKSWVDKMQEDLVTLAKTASGVNQLVDIY
EKYQDLYTVEPNARQLVEIAARDIEKLLSNRSKALVRLALEAEKVQAAHQWREDFASNEV
VYNAKDDLDPEKNDSEPGSQRIKPVFIDDANFGRQISYQHAHVHIPTDIYEGSTIVLNEL
10 NWTSALEDEVFKKNREEDPSLLWQVFGSATGLARYYPASPWVDNSRTPNKIDLYDVRRRPWY
IQGAASPKDMLILVDVSGSVSGLTLKLIRTSVSEMLETLSDDDFVNVASFNSNAQDVSCFQ
HLVQANVRNKKVLKDAVNNITAKGITDYKKGFSFAFEQLLNYNVSRANCNKIIMLFTDGGE
ERAQEIFAQYNKDKKVRVFTFSVGQHNDRGPIQWMACENKGYYYEIPSIGAIRINTQEYL
DVLGRPMVLGADKAKQVQWNTVYLDALGLVITGTLPVFNITGQENKTNLKNQLILGVM
15 GVDVSLEDIKRLTPRFTLCPNGYYFAIDPNGYVLLHPNLQKPNPKSQEPVTLDFLDAELEN
DIKVEIRNKMIDGESGEKTFRTLKVSQDERYIDKGNRTYTWTVPVNGTDYSLALVLPTYSFY
YIKAKIEETITQARSKKGMKDSETLKPDNFEESGYTFIAPRDYCNLDKISDNNTFEFLNF
NEFIDRKTPNPNPCNTDLINRVLLDAGFTNELVQNYWSKQKNIKGVKARFVVTGGITRVY
PKEAGENWQENPETYEDSFYKRSLDNDNYVFTAPYFNKSGPGAYESGIMVSKAVEIYIQGK
20 LLKPAVVGIIKIDVNSWIENFTKTSIRDPCAGPVCDCKRNSDVMDCVILDDGGFLLMANHDD
YTNQIGRFFGEIDPSLMRHLVNISVYAFNKSYDYQSVCEPGAAPKQGAGHRSAYVPSIADI
LHIGWWATAAAWSILQQFLSLTFPRLLLEAVEMEDDDFTASLSKQSCITEQTQYFFDNDK
SFSGVLDCGNCRIHFVEKLMNTNLIIFIMVESKGTCPDTRLLIQAEQTS DGPDPDCMVKQ
PRYRKGPDVCFDNNALDYTDGCGVSGLNPSLWSIFGIQCVLLWLLSGSRHYQL

25

6 - porcine amino acid sequence

MAAGCLLALTTLTLFQSLIGPSSQEPFPSAVTIKSWVDKMQEDLVTLAKTASGVNQLVDIY
EKYQDLYTVEPNARQLVEIAARDIEKLLSNRSKALVRLALEAEKVQAAHQWREDFASNEV
VYNAKDDLDPEKNDSEPGSQRIKPVFIDDANFGRQISYQHAHVHIPTDIYEGSTIVLNEL
30 NWTSALEDEVFKKNREEDPSLLWQVFGSATGLARYYPASPWVDNSRTPNKIDLYDVRRRPWY
IQGAASPKDMLILVDVSGSVSGLTLKLIRTSVSEMLETLSDDDFVNVASFNSNAQDVSCFQ
HLVQANVRNKKVLKDAVNNITAKGITDYKKGFSFAFEQLLNYNVSRANCNKIIMLFTDGGE

ERAQEIFAKYNKDKKVRVFTFSVGQHNYDRGPIQWMACENKGYYYEIP SIGAIRINTQEYL
DVLGRPMVLAGDKAKQVQWTVNYLDALELGLVITGTLPVFNITGQENKTNLKNQLILGVM
GVDVSLEDIKRLTPRFTLCPNGYYFAIDPNGYVLLHPNLQPKNPKSQEPVTLDFLDAELEN
DIKVEIRNKMIDGESGEKTFRTL VKSQDERYIDKGNRTYTWTVPVNGTDYSLALVLP TYSFY
5 YIKAKIEETITQARSKKGKMKDSETLKPDNFEESGYTFIAPRDYCNDLKISDNNT EFLN F
NEFIDRKT PNNPSCNTDLINRVLLDAGFTNELVQNYWSKQKNIKGVKARFVVT DGGITRVY
PKEAGENWQENPETYEDSFYKRSLDNDNYVFTAPYFNKSGPGAYESGIMVSKAVEIYIQGK
LLKPAVVGIKIDVNSWIENFTKTSIRDPCAGPVCDCKRNSDVMDCVILDDGGFLLMANHDD
YTNQIGRFFGEIDPSLMRHLVNI SVYAFNKSYDYQSVCEPGAAPKQGAGHRSAYVPSIADI
10 LHIGWWATAAAWSILQQFLLSLTFPRLLEAVEMEDDDFTASLSKQSCITEQTQYFFDND SK
SFSGLDCGNC SRI FHVEKLMNTNLI FIMVESKGTCPCDTRL

7 - porcine amino acid sequence

MAAGCLLALTLTLFQSL LIGPSSQEPFPSAVTIKSWVDKMQEDLVT LAKTASGVNQLVDIY
15 EKYQDLYTVEPNARQLVEIAARDIEKLLSNRSKALVRLALEAEKVQAAHQWREDFASNEV
VYYNAKDDLDPEKNDSEPGSQRIPVFID DANFGRQISYQHA AVHIPTDIYEGSTIVL NEL
NWT SALDEVFKKNREEDPSLLWQVFGSATGLARYYPASPWVDNSRTPNKIDLYDVR RRPWY
IQGAASPKDMLILVDVSGSVSGLTLKLIRTSVSEMLET LSDDDFVNVASFNSNAQDVSCFQ
HLVQANVRNKKVLKDAVN NITAGITDYKKGFSFAFEQLLNYNVSRANCNKIIMLFTD GGE
20 ERAQEIFAKYNKDKKVRVFTFSVGQHNYDRGPIQWMACENKGYYYEIP SIGAIRINTQEYL
DVLGRPMVLAGDKAKQVQWTVNYLDALELGLVITGTLPVFNITGQENKTNLKNQLILGVM
GVDVSLEDIKRLTPRFTLCPNGYYFAIDPNGYVLLHPNLQPKNPKSQEPVTLDFLDAELEN
DIKVEIRNKMIDGESGEKTFRTL VKSQDERYIDKGNRTYTWTVPVNGTDYSLALVLP TYSFY
YIKAKIEETITQARSKKGKMKDSETLKPDNFEESGYTFIAPRDYCNDLKISDNNT EFLN F
25 NEFIDRKT PNNPSCNTDLINRVLLDAGFTNELVQNYWSKQKNIKGVKARFVVT DGGITRVY
PKEAGENWQENPETYEDSFYKRSLDNDNYVFTAPYFNKSGPGAYESGIMVSKAVEIYIQGK
LLKPAVVGIKIDVNSWIENFTKTSIRDPCAGPVCDCKRNSDVMDCVILDDGGFLLMANHDD
YTNQIGRFFGEIDPSLMRHLVNI SVYAFNKSYDYQSVCEPGAAPKQGAGHRSAYVPSIADI
LHIGWWATAAAWSILQQFLLSLTFPRLLEAVEMEDDDFTASLSKQSCITEQTQYFFDND SK
30 SFSGLDCGNC SRI FHVEKLMNTNLI FIMVESKGTCPCDTRL LIQAEQTS DGPDPDCMVK

8 - porcine amino acid sequence

MAAGCLLALTTLTLFQSLIGPSSQEPFPSAVTIKSWVDKMQEDLVTLAKTASGVNQLVDIY
EKYQDLYTVEPNARQLVEIAARDIEKLLSNRSKALVRLALEAEKVQAAHQWREDFASNEV
VYYNAKDDLDPEKNDSEPGSQRIKPVFIDANFRQISYQHAAVHIPTDIYEGSTIVLNEL
5 NWT SALDEVFKKNREEDPSLLWQVFGSATGLARYYPASPWVDNSRTPNKIDLYDVRRRPWY
IQGAASPKDMLILVDVSGSVSGLTLKLIRTSVSEMLETLSDDDFVNVASFNSNAQDVSCFQ
HLVQANVRNKKVLKDAVNNITAKGITDYKKGFSFAFEQLLNYNVSRANCNKIIMLFTDGGE
ERAQEIFAKYNKDKKVRVFTFSVGQHNYDRGPIQWMACENKGYYYEIPSIGAIRINTQEYL
DVLGRPMVLAGDKAKQVQWTVNYLDALELGLVITGTLPVFNITGQENKTNLKNQLILGVM
10 GVDVSLEDIKRLTPRFTLCPNGYYFAIDPNGYVLLHPNLQPKNPKSQEPVTLDFLDAELEN
DIKVEIRNKMIDGESGEKTFRTL VKSQDERYIDKGNRTYTWTVPVNGTDYSLALVLPTYSFY
YIKAKIEETITQARSKKGKMKDSETLKP DNFEESGYTFIAPRDYCNDLKI SDNNT EFL LN F
NEFIDRKTPNNPSCNTDLINRVLLDAGFTNELVQNYWSKQKNIKGVKARFVVT DGGITRVY
PKEAGENWQENPETYEDSFYKRSLDNDNYVFTAPYFNKSGPGAYESGIMVSKAVEIYIQGK
15 LLKPAVVGIIKIDVNSWIENFTKTSIRDPCAGPVCDCRNSDVMDCVILDDGGFLLMANHDD
YTNQIGRFFGEIDPSLMRHLVNISVYAFNKS YDYQSVCEPGAAPKQGAGHRSAYVPSIADI
LHIGWWATAAAWSILQQFLLSLTFPRLLEAVEMEDDDFTASLSKQSCITEQTQYFFDND SK
SFSGLDCGNC SRI FHVEKLMNTNLIFIMVESKGTCPCDTRLLIQAEQTS DGPDP CDMVKQ
PRYRKGPDVCFDNNAL EDYTD CGGVS

20

9 - porcine amino acid sequence

MAAGCLLALTTLTLFQSLIGPSSQEPFPSAVTIKSWVDKMQEDLVTLAKTASGVNQLVDIY
EKYQDLYTVEPNARQLVEIAARDIEKLLSNRSKALVRLALEAEKVQAAHQWREDFASNEV
VYYNAKDDLDPEKNDSEPGSQRIKPVFIDANFRQISYQHAAVHIPTDIYEGSTIVLNEL
25 NWT SALDEVFKKNREEDPSLLWQVFGSATGLARYYPASPWVDNSRTPNKIDLYDVRRRPWY
IQGAASPKDMLILVDVSGSVSGLTLKLIRTSVSEMLETLSDDDFVNVASFNSNAQDVSCFQ
HLVQANVRNKKVLKDAVNNITAKGITDYKKGFSFAFEQLLNYNVSRANCNKIIMLFTDGGE
ERAQEIFAKYNKDKKVRVFTFSVGQHNYDRGPIQWMACENKGYYYEIPSIGAIRINTQEYL
DVLGRPMVLAGDKAKQVQWTVNYLDALELGLVITGTLPVFNITGQENKTNLKNQLILGVM
30 GVDVSLEDIKRLTPRFTLCPNGYYFAIDPNGYVLLHPNLQPKNPKSQEPVTLDFLDAELEN
DIKVEIRNKMIDGESGEKTFRTL VKSQDERYIDKGNRTYTWTVPVNGTDYSLALVLPTYSFY
YIKAKIEETITQARSKKGKMKDSETLKP DNFEESGYTFIAPRDYCNDLKI SDNNT EFL LN F

NEFIDRKTPNNPSCNTDLINRVLLDAGFTNELVQNYWSKQKNIKGVKARFVVTDDGGITRVY
PKEAGENWQENPETYEDSFYKRSLDNDNYVFTAPYFNKSGPGAYESGIMVSKAVEIYIQGK
LLKPAVVGIKIDVNSWIENFTKTSIRDPCAGPVCDCRNSDVMDCVILDDGGFLLMANHDD
YTNQIGRFFGEIDPSLMRHLVNISVYAFNKSVDYQSVCEPGAAPKQGAGHRSAYVPSIADI
5 LHIGWWATAAAWSILQQFLLSLTFPRLLEAVEMEDDDFTASLSKQSCITEQTQYFFDNDK
SFSGVLDCGNCSRIHFHVEKLMNTNLI FIMVESKGTCPCDTRLLIQAEQTS DGPDPDCDMVKQ
PRYRKGPDVCFDNNAL EDYTD CGGVSHHHHHH

10 - human nucleotide sequence

10 ATGGCTGCTGGCTGCCTGCTGGCCTTGACTCTGACACTTTTCCAATCTTTGCTCATCGGCC
CCTCGTCGGAGGAGCCGTTCCCTTCGGCCGTCCTATCAAATCATGGGTGGATAAGATGCA
AGAAGACCTTGTCACTGGCAAAACAGCAAGTGGAGTCAATCAGCTTGTGATATTTAT
GAGAAATATCAAGATTTGTATACTGTGGAACCAAATAATGCACGCCAGCTGGTAGAAATTG
CAGCCAGGGATATTGAGAACTTCTGAGCAACAGATCTAAAGCCCTGGTGAGCTGGCATT
15 GGAAGCGGAGAAAGTTCAAGCAGCTCACCAGTGGAGAGAAGATTTTGCAAGCAATGAAGTT
GTCTACTACAATGCAAAGGATGATCTCGATCCTGAGAAAAATGACAGTGAGCCAGGCAGCC
AGAGGATAAAACCTGTTTTTCATTGAAGATGCTAATTTTGGACGACAAATATCTTATCAGCA
CGCAGCAGTCCATATTCCTACTGACATCTATGAGGGCTCAACAATTGTGTAAATGAACTC
AACTGGACAAGTGCCTTAGATGAAGTTTTTCAAAAAGAATCGCGAGGAAGACCCTTCATTAT
20 TGTGGCAGGTTTTTGGCAGTGCCACTGGCCTAGCTCGATATTATCCAGCTTCACCATGGGT
TGATAATAGTAGAACTCCAAATAAGATTGACCTTTATGATGTACGCAGAAGACCATGGTAC
ATCCAAGGAGCTGCATCTCCTAAAGACATGCTTATTCTGGTGGATGTGAGTGGAAAGTGTTA
GTGGATTGACACTTAACTGATCCGAACATCTGTCTCCGAAATGTTAGAAACCCTCTCAGA
TGATGATTTTCGTGAATGTAGCTTCATTTAACAGCAATGCTCAGGATGTAAGCTGTTTTCAG
25 CACCTTGTCCAAGCAAATGTAAGAAATAAAAAAGTGTTGAAAGACGCGGTGAATAATATCA
CAGCCAAAGGAATTACAGATTATAAGAAGGGCTTTAGTTTTGCTTTTGAACAGCTGCTTAA
TTATAATGTTTCCAGAGCAAACCTGCAATAAGATTATTATGCTATTCACGGATGGAGGAGAA
GAGAGAGCCCAGGAGATATTTAACAAATACAATAAAGATAAAAAAGTACGTGTATTCAGGT
TTTCAGTTGGTCAACACAATTATGAGAGAGGACCTATTAGTGGATGGCCTGTGAAAACAA
30 AGGTTATTATTATGAAATTCCTTCCATTGGTGCAATAAGAATCAATACTCAGGAATATTTG
GATGTTTTGGGAAGACCAATGGTTTTAGCAGGAGACAAAGCTAAGCAAGTCCAATGGACAA
ATGTGTACCTGGATGCATTGGAAGTGGGACTTGTCTACTGGAAGTCTTCGGTCTTCAA

- CATAACCGGCCAATTTGAAAATAAGACAACTTAAAGAACCAGCTGATTCTTGGTGTGATG
GGAGTAGATGTGTCTTTGGAAGATATTAAAAGACTGACACCACGTTTTTACACTGTGCCCCA
ATGGGTATTACTTTGCAATCGATCCTAATGGTTATGTTTTATTACATCCAAATCTTCAGCC
AAAGAACCCCAAATCTCAGGAGCCAGTAACATTGGATTTCTTGATGCAGAGTTAGAGAAT
5 GATATTAAAGTGGAGATTCGAAATAAGATGATTGATGGGGAAAGTGGAGAAAAACATTCA
GAACTCTGGTTAAATCTCAAGATGAGAGATATATTGACAAAGGAAACAGGACATACACATG
GACACCTGTCAATGGCACAGATTACAGTTTGGCCTTGGTATTACCAACCTACAGTTTTTAC
TATATAAAAGCCAACTAGAAAGAGACAATAACTCAGGCCAGATCAAAAAGGGCAAAATGA
AGGATTTCGGAAACCCTGAAGCCAGATAATTTTGAAGAATCTGGCTATACATTCATAGCACC
10 AAGAGATTACTGCAATGACCTGAAAATATCGGATAATAACACTGAATTTCTTTTAAATTTT
AACGAGTTTATTGATAGAAAACTCCAAACAACCCATCATGTAACGCGGATTTGATTAATA
GAGTCTTGCTTGATGCAGGCTTTACAAATGAACTTGTCAAAATTACTGGAGTAAGCAGAA
AAATATCAAGGGAGTGAAAGCACGATTTGTTGTGACTGATGGTGGGATTACCAGAGTTTAT
CCCAAAGAGGCTGGAGAAAATTGGCAAGAAAACCCAGAGACATATGAGGACAGCTTCTATA
15 AAAGGAGCCTAGATAATGATAACTATGTTTTCACTGCTCCCTACTTTAACAAAAGTGGACC
TGGTGCCTATGAATCGGGCATTATGGTAAGCAAAGCTGTAGAAATATATATTCAAGGGAAA
CTTCTTAAACCTGCAGTTGTTGGAATTAATAATTGATGTAAATTCCTGGATAGAGAATTTCA
CCAAAACCTCAATCAGAGATCCGTGTGCTGGTCCAGTTTGTGACTGCAAAGAAACAGTGA
CGTAATGGATTGTGTGATTCTGGATGATGGTGGGTTTCTTCTGATGGCAAATCATGATGAT
20 TATACTAATCAGATTGGAAGATTTTTTGGAGAGATTGATCCCAGCTTGATGAGACACCTGG
TTAATATATCAGTTTATGCTTTTAACAAATCTTATGATTATCAGTCAGTATGTGAGCCCGG
TGCTGCACCAAAACAAGGAGCAGGACATCGCTCAGCATATGTGCCATCAGTAGCAGACATA
TTACAAATTGGCTGGTGGGCCACTGCTGCTGCCTGGTCTATTCTACAGCAGTTTCTCTTGA
GTTTGACCTTTCCACGACTCCTTGAGGCAGTTGAGATGGAGGATGATGACTTCACGGCCTC
25 CCTGTCCAAGCAGAGCTGCATTACTGAACAAACCCAGTATTTCTTCGATAACGACAGTAAA
TCATTTCAGTGGTGTATTAGACTGTGGAACTGTTCCAGAATCTTTCATGGAGAAAAGCTTA
TGAACACCAACTTAATATTCATAATGGTTGAGAGCAAAGGGACATGTCCATGTGACACACG
ACTGC
- 30 11 - human nucleotide sequence
ATGGCTGCTGGCTGCCTGCTGGCCTTGACTCTGACACTTTTCCAATCTTTGCTCATCGGCC
CCTCGTCCGAGGAGCCGTTCCCTTCGGCCGTCACTATCAAATCATGGGTGGATAAGATGCA

AGAAGACCTTGTCACTGGCAAAAACAGCAAGTGGAGTCAATCAGCTTGTGATATTTAT
GAGAAATATCAAGATTTGTATACTGTGGAACCAAATAATGCACGCCAGCTGGTAGAAATTG
CAGCCAGGGATATTGAGAACTTCTGAGCAACAGATCTAAAGCCCTGGTGAGCCTGGCATT
GGAAGCGGAGAAAGTTCAAGCAGCTCACCAGTGGAGAGAAGATTTTGCAAGCAATGAAGTT
5 GTCTACTACAATGCAAAGGATGATCTCGATCCTGAGAAAAATGACAGTGAGCCAGGCAGCC
AGAGGATAAAACCTGTTTTTCATTGAAGATGCTAATTTTGACGACAAATATCTTATCAGCA
CGCAGCAGTCCATATTCCTACTGACATCTATGAGGGCTCAACAATTGTGTTAAATGAACTC
AACTGGACAAGTGCCTTAGATGAAGTTTTCAAAAAGAATCGCGAGGAAGACCCTTCATTAT
TGTGGCAGGTTTTTGGCAGTGGCCACTGGCCTAGCTCGATATTATCCAGCTTCACCATGGGT
10 TGATAATAGTAGAACTCCAAATAAGATTGACCTTTATGATGTACGCAGAAGACCATGGTAC
ATCCAAGGAGCTGCATCTCCTAAAGACATGCTTATTCTGGTGGATGTGAGTGGAAGTGTTA
GTGGATTGACACTTAACTGATCCGAACATCTGTCTCCGAAATGTTAGAAACCTCTCAGA
TGATGATTTTCGTGAATGTAGCTTCATTTAACAGCAATGCTCAGGATGTAAGCTGTTTTTCAG
CACCTTGTCCAAGCAAATGTAAGAAATAAAAAAGTGTTGAAAGACGCGGTGAATAATATCA
15 CAGCCAAAGGAATTACAGATTATAAGAAGGGCTTTAGTTTTGCTTTTGAACAGCTGCTTAA
TTATAATGTTTCCAGAGCAAACCTGCAATAAGATTATTATGCTATTCACGGATGGAGGAGAA
GAGAGAGCCCAGGAGATATTTAACAATAACAATAAAGATAAAAAAGTACGTGTATTCAGGT
TTTCAGTTGGTCAACACAATTATGAGAGAGGACCTATTCAGTGGATGGCCTGTGAAAACAA
AGGTTATTATTATGAAATTCCTTCCATTGGTGAATAAGAATCAATACTCAGGAATATTTG
20 GATGTTTTGGGAAGACCAATGGTTTTAGCAGGAGACAAAGCTAAGCAAGTCCAATGGACAA
ATGTGTACCTGGATGCATTGGAACCTGGGACTTGTCTTACTGGAACCTCTCCGGTCTTCAA
CATAACCGGCCAATTTGAAAATAAGACAACTTAAAGAACCAGCTGATTCTTGGTGTGATG
GGAGTAGATGTGTCTTTGGAAGATATTAAAAGACTGACACCACGTTTTTACACTGTGCCCCA
ATGGGTATTACTTTGCAATCGATCCTAATGGTTATGTTTTATTACATCCAAATCTTCAGCC
25 AAAGAACCCCAAATCTCAGGAGCCAGTAACATTGGATTTCTTGATGCAGAGTTAGAGAAT
GATATTAAAGTGGAGATTCGAAATAAGATGATTGATGGGGAAAGTGGAGAAAAAACATTCA
GAACTCTGGTTAAATCTCAAGATGAGAGATATATTGACAAAGGAAACAGGACATACACATG
GACACCTGTCAATGGCACAGATTACAGTTTGGCCTTGGTATTACCAACCTACAGTTTTTAC
TATATAAAAGCCAACTAGAAGAGACAATAACTCAGGCCAGATCAAAAAGGGCAAAATGA
30 AGGATTCGGAAACCTGAAGCCAGATAATTTTGAAGAATCTGGCTATACATTCATAGCACC
AAGAGATTACTGCAATGACCTGAAAATATCGGATAATAACACTGAATTTCTTTTAAATTC
AACGAGTTTATTGATAGAAAACTCCAAACAACCCATCATGTAACGCGGATTTGATTAATA

GAGTCTTGCTTGATGCAGGCTTTACAAATGAACTTGTCCTCAAATTTACTGGAGTAAGCAGAA
AAATATCAAGGGAGTGAAAGCACGATTTGTTGTGACTGATGGTGGGATTACCAGAGTTTAT
CCCAAAGAGGCTGGAGAAAATTGGCAAGAAAACCCAGAGACATATGAGGACAGCTTCTATA
AAAGGAGCCTAGATAATGATAACTATGTTTTCACTGCTCCCTACTTTAACAAAAGTGGACC
5 TGGTGCCTATGAATCGGGCATTATGGTAAGCAAAGCTGTAGAAATATATATTCAAGGGAAA
CTTCTTAAACCTGCAGTTGTTGGAATTAAAATTGATGTAAATTCCTGGATAGAGAATTTCA
CCAAAACCTCAATCAGAGATCCGTGTGCTGGTCCAGTTTGTGACTGCAAAAGAAACAGTGA
CGTAATGGATTGTGTGATTCTGGATGATGGTGGGTTTCTTCTGATGGCAAATCATGATGAT
TATACTAATCAGATTGGAAGATTTTTTGGAGAGATTGATCCAGCTTGATGAGACACCTGG
10 TTAATATATCAGTTTATGCTTTTAACAAATCTTATGATTATCAGTCAGTATGTGAGCCCGG
TGCTGCACCAAAACAAGGAGCAGGACATCGCTCAGCATATGTGCCATCAGTAGCAGACATA
TTACAAATTGGCTGGTGGGCCACTGCTGCTGCCTGGTCTATTCTACAGCAGTTTCTCTTGA
GTTTGACCTTTCACGACTCCTTGAGGCAGTTGAGATGGAGGATGATGACTTCACGGCCTC
CCTGTCCAAGCAGAGCTGCATTACTGAACAAACCCAGTATTTCTTCGATAACGACAGTAAA
15 TCATTCAGTGGTGTATTAGACTGTGGAACTGTTCCAGAATCTTTCATGGAGAAAAGCTTA
TGAACACCAACTTAATATTCATAATGGTTGAGAGCAAAGGGACATGTCCATGTGACACACG
ACTGCTCATACAAGCGGAGCAGACTTCTGACGGTCCAAATCCTTGTGACATGGTTAAGC

12 - human nucleotide sequence

20 ATGGCTGCTGGCTGCCTGCTGGCCTTGACTCTGACACTTTTCCAATCTTGTCTCATCGGCC
CCTCGTCGGAGGAGCCGTTCCCTTCGGCCGTCCTATCAAATCATGGGTGGATAAGATGCA
AGAAGACCTTGTCACTGGCAAAAACAGCAAGTGGAGTCAATCAGCTTGTGATATTTAT
GAGAAATATCAAGATTTGTATACTGTGGAACCAAATAATGCACGCCAGCTGGTAGAAATTG
CAGCCAGGGATATTGAGAACTTCTGAGCAACAGATCTAAAGCCCTGGTGAGCCTGGCATT
25 GGAAGCGGAGAAAGTTCAAGCAGCTCACCAGTGGAGAGAAGATTTTGCAAGCAATGAAGTT
GTCTACTACAATGCAAAGGATGATCTCGATCCTGAGAAAAATGACAGTGAGCCAGGCAGCC
AGAGGATAAAACCTGTTTTTATTGAAGATGCTAATTTTGGACGACAAATATCTTATCAGCA
CGCAGCAGTCCATATTCCTACTGACATCTATGAGGGCTCAACAATTGTGTAAATGAACTC
AACTGGACAAGTGCCTTAGATGAAGTTTTTCAAAAAGAATCGCGAGGAAGACCCTTCATTAT
30 TGTGGCAGGTTTTTGGCAGTGCCACTGGCCTAGCTCGATATTATCCAGCTTCACCATGGGT
TGATAATAGTAGAACTCCAAATAAGATTGACCTTTATGATGTACGCAGAAGACCATGGTAC
ATCCAAGGAGCTGCATCTCCTAAAGACATGCTTATTCTGGTGGATGTGAGTGAAGTGTTA

GTGGATTGACACTTAAACTGATCCGAACATCTGTCTCCGAAATGTTAGAAACCCCTCTCAGA
TGATGATTTTCGTGAATGTAGCTTCATTTAACAGCAATGCTCAGGATGTAAGCTGTTTTTCAG
CACCTTGTCCAAGCAAATGTAAGAAATAAAAAAGTGTTGAAAGACGCGGTGAATAATATCA
CAGCCAAAGGAATTACAGATTATAAGAAGGGCTTTAGTTTTGCTTTTGAACAGCTGCTTAA
5 TTATAATGTTTCCAGAGCAAACCTGCAATAAGATTATTATGCTATTCACGGATGGAGGAGAA
GAGAGAGCCCAGGAGATATTTAACAAATACAATAAAGATAAAAAAGTACGTGTATTCAGGT
TTTCAGTTGGTCAACACAATTATGAGAGAGGACCTATTCAGTGGATGGCCTGTGAAAACAA
AGGTTATTATTATGAAATTCCTTCCATTGGTGCAATAAGAATCAATACTCAGGAATATTTG
GATGTTTTTGGGAAGACCAATGGTTTTAGCAGGAGACAAAGCTAAGCAAGTCCAATGGACAA
10 ATGTGTACCTGGATGCATTGGAACCTGGGACTTGTCACTTACTGGAACCTCTTCCGGTCTTCAA
CATAACCGGCCAATTTGAAAATAAGACAAACTTAAAGAACCAGCTGATTCTTGGTGTGATG
GGAGTAGATGTGTCTTTGGAAGATATTTAAAGACTGACACCACGTTTTTACACTGTGCCCCA
ATGGGTATTACTTTGCAATCGATCCTAATGGTTATGTTTTATTACATCCAAATCTTCAGCC
AAAGAACCCCAAATCTCAGGAGCCAGTAACATTGGATTTCCTTGATGCAGAGTTAGAGAAT
15 GATATTAAAGTGGAGATTCGAAATAAGATGATTGATGGGGAAAGTGGAGAAAAACATTCA
GAACTCTGGTTAAATCTCAAGATGAGAGATATATTGACAAAGGAAACAGGACATACACATG
GACACCTGTCAATGGCACAGATTACAGTTTGGCCTTGGTATTACCAACCTACAGTTTTTAC
TATATAAAAGCCAACTAGAAGAGACAATAACTCAGGCCAGATCAAAAAAGGGCAAAATGA
AGGATTCGGAAACCCCTGAAGCCAGATAATTTTGAAGAACTGGCTATACATTCATAGCACC
20 AAGAGATTACTGCAATGACCTGAAAATATCGGATAATAACACTGAATTTCTTTTAAATTC
AACGAGTTTATTGATAGAAAACTCCAAACAACCCATCATGTAACGCGGATTTGATTAATA
GAGTCTTGCTTGATGCAGGCTTTACAAATGAACTTGTCCAAATTAAGTGGAGTAAGCAGAA
AAATATCAAGGGAGTGAAAGCACGATTTGTTGTGACTGATGGTGGGATTACCAGAGTTTAT
CCCAAAGAGGCTGGAGAAAATTGGCAAGAAAACCCAGAGACATATGAGGACAGCTTCTATA
25 AAAGGAGCCTAGATAATGATAACTATGTTTTCACTGCTCCCTACTTTAACAAAAGTGGACC
TGGTGCCTATGAATCGGGCATTATGGTAAGCAAAGCTGTAGAAATATATATTCAAGGGAAA
CTTCTTAAACCTGCAGTTGTTGGAATTTAAATTTGATGTAAATTCCTGGATAGAGAATTTCA
CCAAACCTCAATCAGAGATCCGTGTGCTGGTCCAGTTTGTGACTGCAAAAGAAACAGTGA
CGTAATGGATTGTGTGATTCTGGATGATGGTGGGTTTTCTTCTGATGGCAAATCATGATGAT
30 TATACTAATCAGATTGGAAGATTTTTTGGAGAGATTGATCCCAGCTTGATGAGACACCTGG
TTAATATATCAGTTTATGCTTTTAAACAAATCTTATGATTATCAGTCAGTATGTGAGCCCGG
TGCTGCACCAAAACAAGGAGCAGGACATCGCTCAGCATATGTGCCATCAGTAGCAGACATA

TTACAAATTGGCTGGTGGGCCACTGCTGCTGCCTGGTCTATTCTACAGCAGTTTCTCTTGA
GTTTGACCTTTCCACGACTCCTTGAGGCAGTTGAGATGGAGGATGATGACTTCACGGCCTC
CCTGTCCAAGCAGAGCTGCATTACTGAACAAACCCAGTATTTCTTCGATAACGACAGTAAA
TCATTAGTGGTGTATTAGACTGTGGAACTGTTCCAGAATCTTTCATGGAGAAAAGCTTA
5 TGAACACCAACTTAATATTCATAATGGTTGAGAGCAAAGGGACATGTCCATGTGACACACG
ACTGCTCATAACAAGCGGAGCAGACTTCTGACGGTCCAAATCCTTGTGACATGGTTAAGCAA
CCTAGATAACCGAAAAGGGCCTGATGTCTGCTTTGATAACAATGTCTTGGAGGATTATACTG
ACTGTGGTGGTGTCTCTG

10 13 - human amino acid sequence

MAAGCLLALTTLTLFQSLIGPSSEEPFPSAVTIKSWVDKMQEDLVTAKTASGVNQLVDIY
EKYQDLYTVEPNARQLVEIAARDIEKLLSNRSKALVSLALEAEKVQAAHQWREDFASNEV
VYYNAKDDLDPEKNDSEPGSQRIKPVFIEDANFGRQISYQHAAVHIPTDIYEGSTIVLNEL
NWTALDEVFKKNREEDPSLLWQVFGSATGLARYYPASPWVDNSRTPNKKIDLYDVRRRPWY
15 IQGAASPKDMLILVDVSGSVSGLTLKLI RTSVSEMLETLDSDDFVNVASFNSAQDVSCFQ
HLVQANVRNKKVLKDAVNNITAKGITDYKKGFSFAFEQLLNYNVSRANCNKIIMLFTDGGE
ERAQEIFNKYNKDKKVRVFRFSVGQHNYERGPIQWMACENKGYYYEIPSIGAIRINTQEYL
DVLGRPMVLGDKAKQVQWTVNYLDALELGLVITGTLPVFNITGQFENKTNLKNQLILGVM
GVDVSLEDIKRLTPRFTLCPNGYYFAIDPNGYVLLHPNLQPKNPKSQEPVTLDFLDALEN
20 DIKVEIRNKMIDGESGEKTFRTLKVSQDERYIDKGNRTYTWTVPVNGTDYSLALVLPYTSFY
YIKAKLEETITQARSKKGKMKDSETLKPDNFEESGYTFIAPRDYCNLDKISDNNTEFLLNF
NEFIDRKTPNPNPCNADLINRVLLDAGFTNELVQNYWSKQKNIKGVKARFVVDGGITRVY
PKEAGENWQENPETYEDSFYKRSLDNDNYVFTAPYFNKSGPGAYESGIMVSKAVEIYIQGK
LLKPAVVGKIDVNSWIENFTKTSIRDPCAGPVCDCKRNSDVMDCVILDDGGFLLMANHDD
25 YTNQIGRFFGEIDPSLMRHLVNISVYAFNKSYDYQSVCEPGAAPKQGAGHRSAVPSVADI
LQIGWWATAAAWSILQQFLLSLTFPRLLLEAVEMEDDDFTASLSKQSCITEQTQYFFDNDK
SFSGVLDCGNCRI FHGEKLMNTNLI FIMVESKGTCPDTRL

14 - human amino acid sequence

30 MAAGCLLALTTLTLFQSLIGPSSEEPFPSAVTIKSWVDKMQEDLVTAKTASGVNQLVDIY
EKYQDLYTVEPNARQLVEIAARDIEKLLSNRSKALVSLALEAEKVQAAHQWREDFASNEV
VYYNAKDDLDPEKNDSEPGSQRIKPVFIEDANFGRQISYQHAAVHIPTDIYEGSTIVLNEL

NWTSALDEVFKKNREEDPSLLWQVFGSATGLARYYPASPWVDNSRTPNKIDLYDVRRRPWY
IQGAASPKDMLILVDVSGSVSGLTLKLIRTSVSEMLETLSDDDFVNVASFNSNAQDVSCFQ
HLVQANVRNKKVLKDAVNNITAKGITDYKKGFSFAFEQLLNYNVSRANCNKIIMLFTDGGE
ERAQEIFNKYNKDKKVRVFRFSVGQHNYERGPIQWMACENKGYYYEIPSIGAIRINTQEYL
5 DVLGRPMVLADGKAKQVQWNTNVYLDALGLVITGTLPVFNITGQFENKTNLKNQLILGVM
GVDVSLEDIKRLTPRFTLCPNGYYFAIDPNGYVLLHPNLQPKNPKSQEPVTLDFLDAELEN
DIKVEIRNKMIDGESGEKTFRTLKVSQDERYIDKGNRTYTWTVPVNGTDYSLALVLPTYSFY
YIKAKLEETITQARSKKGKMKDSETLKPDNFEESGYTFIAPRDYCNDLKISDNNTEFLNLF
NEFIDRKTNNPSCNADLINRVLLDAGFTNELVQNYWSKQKNIGVKARFVVTGGITRVY
10 PKEAGENWQENPETYEDSFYKRSLDNDNYVFTAPYFNKSGPGAYESGIMVSKAVEIYIQGK
LLKPAVVGIIKIDVNSWIENFTKTSIRDPCAGPVCDCKRNSDVMDCVILDDGGFLLMANHDD
YTNQIGRFFGEIDPSLMRHLVNI SVYAFNKSYDYQSVCEPGAAPKQGAGHRSAYVPSVADI
LQIGWWATAAAWSILQQFLLSLTFPRLLEAVEMEDDDFTASLSKQSCITEQTQYFFDNDISK
SFSGVLDCGNCRI FHGEKLMNTNLI FIMVESKGTCPCDTRLLIQAEQTS DGPNPCDMVK

15

15 - human amino acid sequence

MAAGCLLALTLTLFQSLIGPSSEEPFSAVTIKSWVDKMQEDLVTAKTASGVNQLVDIY
EKYQDLYTVEPNARQLVEIAARDIEKLLSNRSKALVSLALEAEKVQAAHQWREDFASNEV
VYYNAKDDLDPEKNDSEPGSQRIKPVFIEDANFRQISYQHAAVHIPTDIYEGSTIVLNEL
20 NWTSALDEVFKKNREEDPSLLWQVFGSATGLARYYPASPWVDNSRTPNKIDLYDVRRRPWY
IQGAASPKDMLILVDVSGSVSGLTLKLIRTSVSEMLETLSDDDFVNVASFNSNAQDVSCFQ
HLVQANVRNKKVLKDAVNNITAKGITDYKKGFSFAFEQLLNYNVSRANCNKIIMLFTDGGE
ERAQEIFNKYNKDKKVRVFRFSVGQHNYERGPIQWMACENKGYYYEIPSIGAIRINTQEYL
DVLGRPMVLADGKAKQVQWNTNVYLDALGLVITGTLPVFNITGQFENKTNLKNQLILGVM
25 GVDVSLEDIKRLTPRFTLCPNGYYFAIDPNGYVLLHPNLQPKNPKSQEPVTLDFLDAELEN
DIKVEIRNKMIDGESGEKTFRTLKVSQDERYIDKGNRTYTWTVPVNGTDYSLALVLPTYSFY
YIKAKLEETITQARSKKGKMKDSETLKPDNFEESGYTFIAPRDYCNDLKISDNNTEFLNLF
NEFIDRKTNNPSCNADLINRVLLDAGFTNELVQNYWSKQKNIGVKARFVVTGGITRVY
PKEAGENWQENPETYEDSFYKRSLDNDNYVFTAPYFNKSGPGAYESGIMVSKAVEIYIQGK
30 LLKPAVVGIIKIDVNSWIENFTKTSIRDPCAGPVCDCKRNSDVMDCVILDDGGFLLMANHDD
YTNQIGRFFGEIDPSLMRHLVNI SVYAFNKSYDYQSVCEPGAAPKQGAGHRSAYVPSVADI
LQIGWWATAAAWSILQQFLLSLTFPRLLEAVEMEDDDFTASLSKQSCITEQTQYFFDNDISK

SFSGVLDCGNCSCRI FHGEKLMNTNLI FIMVESKGTCPCDTRLLIQA EQTSDGPNPCDMVKQ
PRYRKGPDVCFDNNVLEDYTD CGGV

16 - human alpha2 delta-1 amino acid sequence

5 MAAGCLLALTTLTFQSL LIGPSSEEPFPSAVTIKSWVDKMQEDLVT LAKTASGVNQLVDIY
EKYQDLYTVEPNARQLVEIAARDIEKLLSNRSKALVSLALEAEKVQAAHQWREDFASNEV
VYYNAKDDLDPEKNDSEPGSQRIKPVFIEDANFGRQISYQHAAVHIPTDIYEGSTIVLNEL
NWT SALDEVFKKNREEDPSLLWQVFGSATGLARYYPASPWVDNSRTPNKIDLYDVRRRPWY
IQGAASPKDMLILVDVSGSVSGLTLKLIRTSVSEMLET L SDDDFVNVA SFNSNAQDVSCFQ
10 HLVQANVRNKKVLKDAVNNITAKGITDYKKGFSFAFEQLLNYNVSRANCNKIIMLF TDGGE
ERAQEIFNKYNKDKKVRVFRFSVGQHNYERGPIQWMACENKGYYYEIP SIGAIRINTQEYL
DVLGRPMVLAGDKAKQVQWTVNYLDALELGLVITGTLPVFNITGQFENKTNLKNQLILGVM
GVDVSLEDIKRLTPRFTLC PNGYYFAIDPNGYVLLHPNLQPKNPKSQEPVTLDFLDAELEN
DIKVEIRNKMIDGESGEKTFRTL VKSQDERYIDKGNRTYTWT P VNGTDYSLALVLP TYSFY
15 YIKAKLEETITQARSKKGKMKDSETLKP DNFEESGYTFIAPRDYCN DLKISDNNT EFLN F
NEFIDRKTPNNPSCNADLINRVLLDAGFTNELVQNYWSKQKNIKGVKARFVVT DGGITRVY
PKEAGENWQENPETYEDSFYKRSLDNDNYVFTAPYFNKSGPGAYESGIMVSKAVEIYIQGK
LLKPAVVGIIKIDVNSWIENFTKTSIRDPCAGPVCDCKRNSDVMDCVILDDGGFLLMANHDD
YTNQIGRFFGEIDPSLMRHLVNISVYAFNKS YDYQSVCEPGAAPKQGAGHRSAYVPSVADI
20 LQIGWWATAAAWSILQQFLSLTFPRLL EAVEMEDDDFTASLSKQSCITEQTQYFFDND SK
SFSGVLDCGNCSCRI FHGEKLMNTNLI FIMVESKGTCPCDTRLLIQA EQTSDGPNPCDMVKQ
PRYRKGPDVCFDNNVLEDYTD CGGV SGLNPSLWYIIGIQFLLLWL VSGSTHRL

17 - human alpha2 delta-1 nucleic acid sequence

25 GCGGGGGAGGGGGCATTGATCTTCGATCGCGAAGATGGCTGCTGGCTGCCTGCTGGCCTTG
ACTCTGACACTTTTCCAATCTTTGCTCATCGGCCCCCTCGTCGGAGGAGCCGTTCCCTTCGG
CCGTCACTATCAAATCATGGGTGGATAAGATGCAAGAAGACCTTGTCACACTGGCAAAAAC
AGCAAGTGGAGTCAATCAGCTTGT TGATATTTATGAGAAATATCAAGATTTGTATACTGTG
GAACCAATAATGCACGCCAGCTGGTAGAAATTGCAGCCAGGGATATTGAGAACTTCTGA
30 GCAACAGATCTAAAGCCCTGGTGAGCCTGGCATTGGAAGCGGAGAAAGTTCAAGCAGCTCA
CCAGTGGAGAGAAGATTTTGCAAGCAATGAAGTTGTCTACTACAATGCAAAGGATGATCTC
GATCCTGAGAAAAATGACAGTGAGCCAGGCAGCCAGAGGATAAAACCTGTTTTTCATTGAAG

ATGCTAATTTTGGACGACAAATATCTTATCAGCACGCAGCAGTCCATATTCCTACTGACAT
CTATGAGGGCTCAACAATTGTGTTAAATGAACTCAACTGGACAAGTGCCTTAGATGAAGTT
TTCAAAAAGAATCGCGAGGAAGACCCTTCATTATTGTGGCAGGTTTTTGGCAGTGCCACTG
GCCTAGCTCGATATTATCCAGCTTCACCATGGGTGATAATAGTAGAACTCCAAATAAGAT
5 TGACCTTTATGATGTACGCAGAAGACCATGGTACATCCAAGGAGCTGCATCTCCTAAAGAC
ATGCTTATTCTGGTGGATGTGAGTGGAAGTGTTAGTGGATTGACACTTAACTGATCCGAA
CATCTGTCTCCGAAATGTTAGAAACCTCTCAGATGATGATTTCTGTGAATGTAGCTTCATT
TAACAGCAATGCTCAGGATGTAAGCTGTTTTCAGCACCTTGTCCAAGCAAATGTAAGAAAT
AAAAAGTGTTGAAAGACGCGGTGAATAATATCACAGCCAAAGGAATTACAGATTATAAGA
10 AGGGCTTTAGTTTTGCTTTTGAACAGCTGCTTAATTATAATGTTTCCAGAGCAAACCTGCAA
TAAGATTATTATGCTATTCACGGATGGAGGAGAAGAGAGAGCCCAGGAGATATTTAACAAA
TACAATAAAGATAAAAAAGTACGTGTATTACAGTTTTTCAGTTGGTCAACACAATTATGAGA
GAGGACCTATTCAGTGGATGGCCTGTGAAAACAAAGGTTATTATTATGAAATTCCTTCCAT
TGGTGAATAAGAATCAATACTCAGGAATATTTGGATGTTTTTGGGAAGACCAATGGTTTTA
15 GCAGGAGACAAAGCTAAGCAAGTCCAATGGACAAATGTGTACCTGGATGCATTGGAACCTGG
GACTTGTCACTACTGGAACCTTCCGGTCTTCAACATAACCGGCCAATTTGAAAATAAGAC
AACTTAAAGAACCAGCTGATTCTTGGTGTGATGGGAGTAGATGTGTCTTTGGAAGATATT
AAAAGACTGACACCACGTTTTTACACTGTGCCCCAATGGGTATTACTTTGCAATCGATCCTA
ATGGTTATGTTTTATTACATCCAAATCTTCAGCCAAAGAACCCCAAATCTCAGGAGCCAGT
20 AACATTGGATTTCTTTGATGCAGAGTTAGAGAATGATATTAAAGTGGAGATTCGAAATAAG
ATGATTGATGGGGAAAGTGGAGAAAAACATTCAGAACTCTGGTTAAATCTCAAGATGAGA
GATATATTGACAAAGGAAACAGGACATACACATGGACACCTGTCAATGGCACAGATTACAG
TTTGGCCTTGGTATTACCAACCTACAGTTTTTACTATATAAAAGCCAAACTAGAAGAGACA
ATAACTCAGGCCAGATCAAAAAAGGGCAAAATGAAGGATTCGGAAACCCTGAAGCCAGATA
25 ATTTTGAAGAATCTGGCTATACATTCATAGCACCAAGAGATTACTGCAATGACCTGAAAAT
ATCGGATAATAACACTGAATTTCTTTTAAATTTCAACGAGTTTATTGATAGAAAACTCCA
AACAACCCATCATGTAACGCGGATTTGATTAATAGAGTCTTGCTTGATGCAGGCTTTACAA
ATGAACTTGTCCAAAATTACTGGAGTAAGCAGAAAAATATCAAGGGAGTGAAAGCACGATT
TGTTGTGACTGATGGTGGGATTACCAGAGTTTATCCCAAAGAGGCTGGAGAAAATTGGCAA
30 GAAAACCCAGAGACATATGAGGACAGCTTCTATAAAAGGAGCCTAGATAATGATAACTATG
TTTTCACTGCTCCCTACTTTAACAAAAGTGGACCTGGTGCCTATGAATCGGGCATTATGGT
AAGCAAAGCTGTAGAAATATATATTCAAGGGAACTTCTTAAACCTGCAGTTGTTGGAATT

AAAATTGATGTAAATTCCTGGATAGAGAATTTACCAAACCTCAATCAGAGATCCGTGTG
CTGGTCCAGTTTGTGACTGCAAAAGAAACAGTGACGTAATGGATTGTGTGATTCTGGATGA
TGGTGGGTTTCTTCTGATGGCAAATCATGATGATTATACTAATCAGATTGGAAGATTTTTT
GGAGAGATTGATCCCAGCTTGATGAGACACCTGGTTAATATATCAGTTTATGCTTTTAAAC
5 AATCTTATGATTATCAGTCAGTATGTGAGCCCGGTGCTGCACCAAAACAAGGAGCAGGACA
TCGCTCAGCATATGTGCCATCAGTAGCAGACATATTACAAATTGGCTGGTGGGCCACTGCT
GCTGCCTGGTCTATTCTACAGCAGTTTCTCTTGAGTTTGACCTTTCACGACTCCTTGAGG
CAGTTGAGATGGAGGATGATGACTTCACGGCCTCCCTGTCCAAGCAGAGCTGCATTACTGA
ACAAACCCAGTATTTCTTCGATAACGACAGTAAATCATTTCAGTGGTGTATTAGACTGTGGA
10 AACTGTTCCAGAATCTTTCATGGAGAAAAGCTTATGAACACCAACTTAATATTCATAATGG
TTGAGAGCAAAGGGACATGTCCATGTGACACACGACTGCTCATAACAAGCGGAGCAGACTTC
TGACGGTCCAAATCCTTGTGACATGGTTAAGCAACCTAGATACCGAAAAGGGCCTGATGTC
TGCTTTGATAACAATGTCTTGAGGATTATACTGACTGTGGTGGTGTCTTCTGGATTAAATC
CCTCCCTGTGGTATATCATTGGAATCCAGTTTCTACTACTTTGGCTGGTATCTGGCAGCAC
15 ACACCGGCTGTTATGACCTTCTAAAAACCAATCTGCATAGTTAAACTCCAGACCCTGCCA
AAACATGAGCCCTGCCCTCAATTACAGTAACGTAGGGTCAGCTATAAAATCAGACAAACAT
TAGCTGGGCCTGTTCCATGGCATAACACTAAGGCGCAGACTCCTAAGGCACCCACTGGCTG
CATGTCAGGGTGTGAGATCCTTAAACGTGTGTGAATGCTGCATCATCTATGTGTAACATCA
AAGCAAAATCCTATACGTGTCTCTATTGGAAAATTTGGGCGTTTGTGTTGCATTGTTGG
20 T

18 - nucleotide sequence

GGGGATTGATCTTCGATCGCG

25 19 - nucleotide sequence

CTGAGATTGGGGTTCTTTGG

20 - nucleotide sequence

TCGCCACCATGGCTGCTGGCTGCCTGCTG

30

21 - nucleotide sequence

TCGGAATTCCTCAGTGATGGTGATGGTGATGAGAAACACCACCACAGTCGGT